

MODIS Pigment Concentration (MOD 19), Suspended Solids Concentration (MOD 23), Organic Matter Concentration (MOD 24), and Ocean Water Attenuation Coefficient (MOD 26)

Product Description

This set of products provides particle concentrations in Case 1 sea water, which have optical properties dominated by chlorophyll and associated covarying detrital pigments. (Case 2 waters contain substances that affect optical properties that may not covary with chlorophyll, such as gelbstoff, suspended sediments, coccolithophores, detritus, and bacteria.) Product MOD 19 is total Pigment Concentration; Product MOD 23 is Suspended Solids Concentration; Product MOD 24 is Organic Matter Concentration in two parameters, Particulate and Dissolved; and Product 26 gives the Ocean Water Attenuation Coefficient at two wavelengths, 490 nm and 530 nm. The products are available at Level 2 daily and at Level 3 daily, 8-day weekly, monthly, and yearly.

Research and Applications

This set of ocean-substance concentrations is needed for input to the ocean productivity algorithm, which is a key element in global biogeochemical models and ultimately global climate models. The pigment parameter is the sum of the chlorophyll *a* and phaeopigment concentration in Case 1 waters. The suspended-solids parameter is a measure of ocean-suspended sediments, which is used in the analysis of complex bio-optical properties of coastal and estuarine regions/environments and helps to map the extent of terrestrial changes. The organic-matter concentration relates to the composite of carbon and nitrogen substances. The ocean water attenuation coefficient is derived using MODIS bands 10 and 11 and describes penetration of sunlight in the sea.

Data Set Evolution

The algorithm is based primarily on methods and algorithms developed for the CZCS program described by Gordon and Clark (1980) and refined and adapted to the MODIS bands. The recasting of the CZCS

forms of the phytoplankton pigment algorithms in terms that are more representative for MODIS has resulted in minor changes. Of particular significance is the fact that the multiple band ratios will provide a robustness not possible with the CZCS's limited spectral coverage.

Suggested Reading

Gordon, H.R., and D.K. Clark, 1980.

Gordon, H.R. *et al.*, 1980.

Gordon, H.R., and A.Y. Morel, 1983.

Lorenzen, C.J., and S.W. Jeffrey, 1980.

Smith, R.C., and K.S. Baker, 1977.

MOD 19, MOD 23, MOD 24, and MOD 26 Data Product Summary

Coverage: Global ocean surface, clear-sky only

Spatial/Temporal Characteristics: 1 km/daily (Level 2); 4.6 km, 36 km, 1°/daily, 8-day, monthly, yearly (Level 3)

Key Science Applications: Ocean productivity, biogeochemical models

Key Geophysical Parameters: Total ocean pigment, suspended solids, organic-matter concentration, attenuation coefficient

Processing Level: 2, 3

Product Type: Standard, at-launch

Maximum File Size:

MOD 19: 102 MB (Level 2); 620 MB (Level 3)

MOD 23: 102 MB (Level 2); 640 MB binned, 134 MB mapped (Level 3)

MOD 24: 83 MB (Level 2); 640 MB binned, 134 MB mapped (Level 3)

MOD 26: 102 MB (Level 2); 640 MB binned, 134 MB mapped (Level 3)

File Frequency:

MOD 19: 144/day (Daily Level 2); 3/day (Daily Level 3), 3/8-day (8-day Level 3), 3/month (Monthly Level 3), 3/year (Yearly Level 3)

MOD 23, MOD 24, MOD 26: 144/day (Daily Level 2); 1/day (Daily Level 3), 1/8-day (8-day Level 3), 1/month (Monthly Level 3), 1/year (Yearly Level 3)

Primary Data Format: HDF-EOS

Browse Available: 36 km sample imagery available at the Goddard DAAC (Level 3 only)

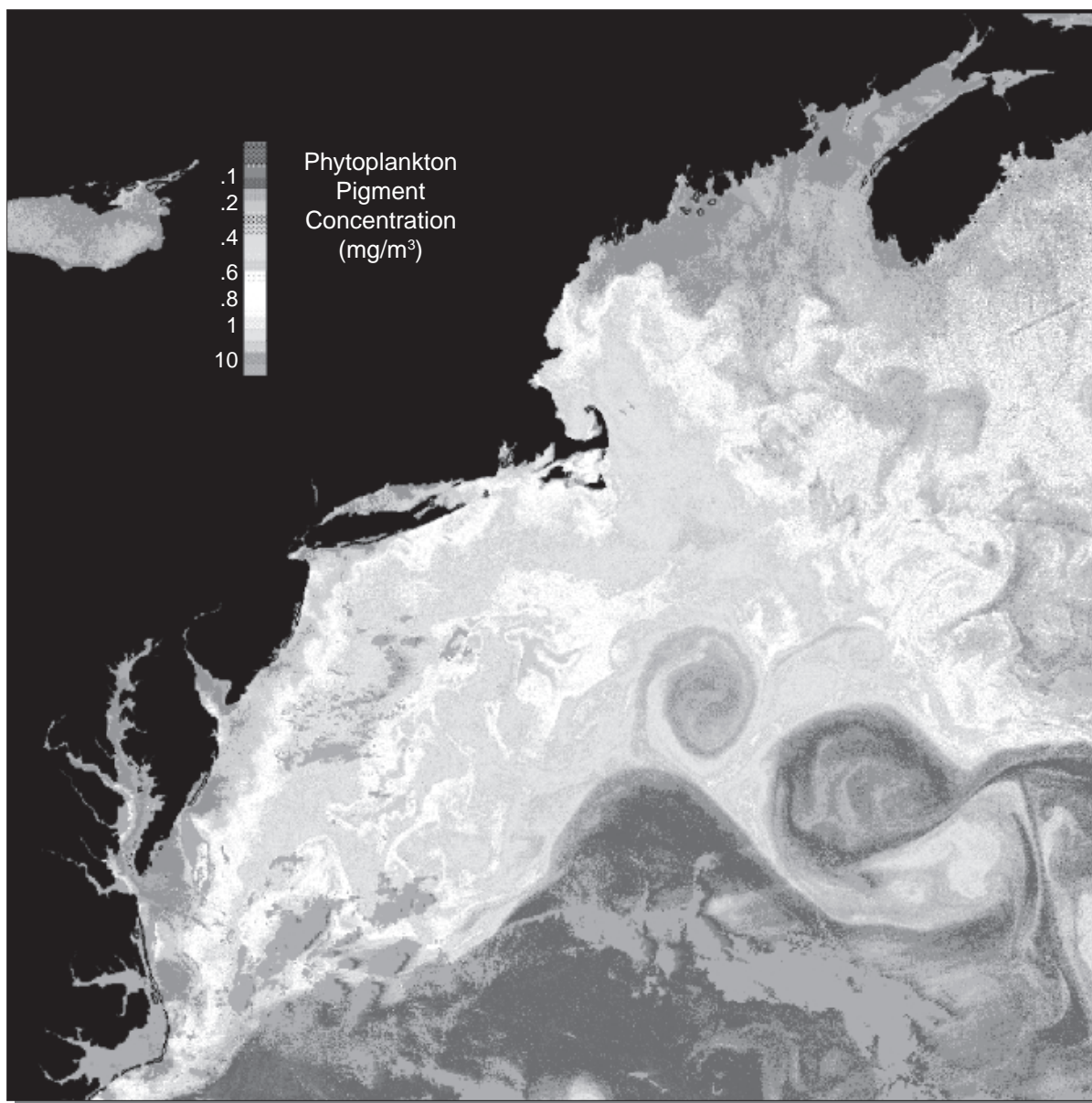
Additional Product Information:

<http://modis-ocean.gsfc.nasa.gov/dataproduct.html>

DAAC: NASA Goddard Space Flight Center

Science Team Contact:

D. Clark



U.S. East Coast Ocean-Color Image. This daily Coastal Zone Color Scanner (CZCS) product for the northeastern coast of the United States reveals the high pigment concentrations along the coast and the influence of the Gulf Stream. Phytoplankton concentrations, and additional ocean-carbon-system parameters from MODIS, will be considerably more accurate than was possible with the CZCS because of improvements in spectral bands, calibration, and algorithms. (From NASA GSFC.)